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SDS on Roundup Ready soybean

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Abstract
I have been receiving questions about sudden death syndrome (SDS) on Roundup Ready soybean because some press reports based on a study by Missouri researchers have implicated the possibility of occurrence of SDS after Roundup (glyphosate) application. The preliminary results of the Missouri study were presented as a poster at a meeting. The study indicated that Roundup Ready (RR) soybeans receiving glyphosate at recommended rates had significantly higher incidence of Fusarium fungi on roots 1 week after application compared with soybean that did not receive glyphosate.

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The preliminary results of the Missouri study were presented as a poster at a meeting. The study indicated that Roundup Ready (RR) soybeans receiving glyphosate at recommended rates had significantly higher incidence of Fusarium fungi on roots 1 week after application compared with soybean that did not receive glyphosate. The study also reported that glyphosate application significantly increased the numbers of soil *Fusarium* but no differences in yield were found among treatments. My interpretation of their report is that it is too early to draw conclusions on the effects of Roundup on SDS because the study did not focus on the SDS fungus. There are many *Fusarium* fungi in soil and on soybean roots, but only one causes SDS, *Fusarium solani* f. sp. *glycines*.

My colleagues and I conducted a similar 3-year study here at Iowa State University, with support from a USDA competitive grant and checkoff funds. It addressed RR soybean response to SDS under different herbicide programs, including glyphosate. Experiments were conducted in growth chambers, in the greenhouse, and in the field. Our results should shed some light on this topic.

Our study showed that response of RR soybean to SDS under glyphosate application was the same as with other conventional herbicides (imazethapyr or acifluorfen). Foliar symptoms in treatments with these herbicides increased approximately 10 percent compared with no-spray control in field experiments and the differences disappeared as seasons progressed. In control conditions, foliar symptoms in these treatments increased in greenhouse experiments but not in growth chamber experiments. When soybean received Lectofen application, disease was slightly reduced, indicating a possibility of resistance response triggered by this herbicide. When SDS-resistant/tolerant RR soybean was planted, SDS was significantly reduced compared with SDS-susceptible soybean, suggesting that glyphosate did not change the resistance to SDS. Glyphosate and other tested herbicides reduced SDS fungal spore germination. Thus, our study indicated that 1) the response of RR soybeans to SDS under glyphosate was similar to that under conventional herbicides, and 2) RR soybean and non-RR soybean respond similarly to SDS infection after herbicide application (not including glyphsate). Our study results were published in 1999 in Phytopathology, a journal produced by American Phytopathological Society. A second article is under way.

SDS has increased its prevalence in Iowa as well as other north central states. If you are concerned about SDS in your fields, early detection through regular scouting during the growing season helps prevent the disease. If SDS is a production problem in your fields,

consider planting SDS-tolerant varieties available for both RR and non-RR soybean.

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